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EXAMINER	
CHOW, CHARLES CHIANG	
ART UNIT	PAPER NUMBER
2618	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/24/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/533,207	SHIRAKATA ET AL.	
	Examiner	Art Unit	
	Charles Chow	2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 December 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,10 and 11* is/are rejected.

7)☒ Claim(s) *4-9* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 April 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Detailed Action

1. This office action is for amendment received on 12/18/2006.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claim 1 is provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1 of copending Application No. 11/262,822 in view of following reasons.

Current Application 10/533,207	**Previous application 11/262,822**
Claim 1, A diversity receiving apparatus for receiving a packet having embedded therein symbols which are multiple repetitions of a pattern signal having a predetermined pattern,	**Claim 1**. A diversity receiver, comprising:
the apparatus comprising: a plurality of antennas; an antenna switching section for selecting an antenna from the plurality of antennas and outputting a signal received by the selected antenna as a received signal;	a control section for generating an antenna selection signal such that a plurality of antennas are sequentially selected on a one-by-one basis;
a gain amplifier section for amplifying the received signal outputted from the antenna switching section and outputting the amplified signal;	a gain amplifier for amplifying, based on a gain control signal, a signal which is received through an antenna selected according to the antenna selection signal;

a gain control section for controlling a gain of the gain amplifier section;	
a power measurement section for measuring an instantaneous power of an output signal from the gain amplifier section;	a power measurement section for measuring a power of the signal amplified by the gain amplifier;
an averaging section for taking an average of the instantaneous power measured by the power measurement section on an averaging period-by-averaging period basis, and measuring the average powers, the averaging period having the same time length as one period of the pattern signal; and	an averaging section for calculating an average power of each of signals received through the plurality of antennas based on the power measured in the power measurement section; a holding section for holding at least one of the average powers; a plurality of correlation sections which correspond to the plurality of antennas on a one-to-one basis, each of the correlation sections determining a correlation value between a signal received through a corresponding antenna and amplified by the gain amplifier and a predetermined pattern; a correlation detector for detecting the predetermined pattern in a signal received through each of the plurality of antennas based on a correlation value determined by a corresponding one of the correlation sections and an average power corresponding to the antenna and outputting a detection result; and
a control section for controlling the gain control section so that the gain amplifier section has a desired gain, and	a gain controller for generating the gain control signal such that the gain amplifier operates with a fixed gain till the control section determines an antenna that is to be subsequently selected and thereafter operates with a gain determined according to an average power corresponding to the selected antenna,
controlling a selection of the antennas made by the antenna switching section, wherein during all or part of a time period during which the pattern signals are received, the control section allows the gain control section to fix the gain of the gain amplifier section, allows the antenna switching section to sequentially switch the selection of the antennas during antenna switching periods which are synchronized with the averaging periods, and	wherein the control section determines an antenna through which a signal including the predetermined pattern detected by the correlation detector is received as the antenna that is to be subsequently selected based on the detection result of the correlation detector and outputs the antenna selection signal to select the determined antenna.
determines an antenna to receive data contained in the packet, based on levels of the average powers measured by the averaging section on the averaging period-by-averaging period basis.	a correlation detector for detecting the predetermined pattern in a signal received through each of the plurality of antennas based on a correlation value determined by a corresponding one of the correction sections and average power corresponding to the antenna and outputting a detection result; and wherein the control section determines an antenna

	through which a signal including the predetermined pattern detected by the correlation detector is received as the antenna that is to be subsequently selected based on the detection result of the correlation detector and outputs the antenna selection signal to select the determined antenna

In the above comparison table, claim 1 of current application has the equivalent claimed features with the features in claim 1 of 11/262,822, excepting using different words to describe the claimed features. This is a provisional obviousness-type double patenting rejection.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-3, 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Terao (US 2004/0214,529 A1) in view of Saed et al. (US 2004/0266,374 A1).

For claim 1, Terao teaches a diversity receiving apparatus [Fig. 1; receiving DS-Cdma signal, paragraph 0014], the apparatus comprising a plurality of antennas [antenna A, B],

an antenna switching section [2] for selecting an antenna from the plurality of antennas [A, B] and outputting a signal received by the selected antenna a received signal [receiver 100 receives the selected output signal from antenna B via switch unit 2, controlled by 7 or 5, paragraph 0014-0015, Fig. 1],

a gain amplifier section [101, 106a/106b] for amplifying the received signal outputted from the antenna switching section [2] and outputting the amplified signal [amplifier 101 outputting amplified signal to mixer 102a/102b; 106a/106b outputs to A/D 22a/22b],

a gain control section [gain controller 107] for controlling a gain of the gain amplifier section [101, paragraph 0016],

a power measurement section [5] for measuring an instantaneous power of an output signal from the gain amplifier section [output signals from 101, 106a/106b, via A/D 22a/22b, average power 3, 5 calculates instantaneous power, or for a number of times, paragraph 0017],

an average section [3] for taking average of the instantaneous power measured by the power measurement section [the storing of calculated received instantaneous power into memory 6 & added to the stored received power, as the claimed measured by the power measurement section, instantaneous power 5, paragraph 0017], on an averaging period-by-averaging period basis, and measuring the average powers [the averaging power in period t6 to t7, four times for each antenna, the timing chart in Fig. 2, paragraph 0027],

a control section for controlling [107] the gain control section so that the gain amplifier section [101, 106a/106b] has a desired gain [controls the gain based on the AGC gain calculator 4, paragraph 0017, 0016], and

controlling a selection of the antennas made by the antenna selection switching section [the unit 7 compares the received averaged power in memory to select an antenna with larger received power via switch 2, paragraph 0017]

during all or part of a time period during which the signals are received, the control section allows the gain control section to fix the gain [the high speed updating, setting, the gain in a period before starting in paragraph 0018; the predetermined gain beforehand in paragraph 0020; the setting, updating, the gain before normal agc operation executed according to Fig. 3 paragraph 0027], allows the antenna switching section to sequentially switch the selection of the antennas during antenna switching periods which are

synchronized with the averaging periods [the sequential antenna switching period in top row of Fig. 2, period t2-t3 from antenna A to antenna B; switching period t4-t5 from antenna B to antenna A, are respectively synchronized with the timing period for averaging power in second row of Fig. 2, the period t1-t2, t3-t4, t6-t7],

the determines an antenna to receive data contained in the signal based on levels of the average powers measured by the averaging section [the averaging 3, memory 6, the unit 7 compares the received averaged power in memory to select an antenna with larger received power via switch 2, paragraph 0017], on an averaging period-by-averaging period basis [the averaging power in period t6 to t7, four times for each antenna, the timing chart in Fig. 2, paragraph 0027].

Terao fails to teach the receiving a packet having embedded therein symbols which are multiple repetitions of a pattern signal having a predetermined pattern; & an average of the instantaneous power measured by the power measurement section on an averaging period-by-averaging period basis, and the averaging period having the same time length as one period of the pattern signal; & the determines an antenna to receive data contained in the packet based on levels of the average powers.

Saed et al. [Saed] teaches the receiving a packet [60, Fig. 7] having embedded therein symbols [preamble 62] which are multiple repetitions of a pattern signal having a predetermined pattern [the transmitting packet 60 to receiver 26 for repeated receiving each packet 60 which has pattern for synchronization to perform diversity selection in preamble 62, paragraph 42];

the averaging period having the same time length as one period of the pattern signal [the averaging power/rssi over a given period of the preamble, pattern, is the claimed the same time length as one period of pattern signal, paragraph 0044, 0015],

the determines an antenna to receive data contained in the packet based on levels of the average powers [the detecting a received packet at step 100, the step 106 when average power 106 is greater than the threshold thr_Great, to select antenna A at step 108, otherwise select antenna b at step 110, Fig. 8], in order to reliably select an antenna based on the received packet having preamble [paragraph 0016-0017]. Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to upgrade Terao with Saed's packet with preamble for selecting antenna, in order to reliably select an antenna based on the received packet having preamble.

For claim 2, Terao teach the diversity receiving apparatus [Fig. 1].

Terao also teaches the wherein during a waiting time for the signals, the control section controls the gain control section such that the gain amplifier section amplifies the received signal with a first fixed gain [the high speed updating, setting the gain in a period before starting in paragraph 0018; the predetermined gain beforehand in paragraph 0020; the setting, updating, the gain before normal agc operation executed according to Fig. 3 paragraph 0027, as the waiting for signals to set amplifier gain],

and allows the antenna switching section to sequentially switch the selection of the antenna during the antenna switching period [the sequential antenna switching period in top row of Fig. 2, period t2-t3 from antenna A to antenna B; switching period t4-t5 from antenna B to antenna A, are respectively synchronized with the timing period for averaging power in second row of Fig. 2, the period t1-t2, t3-t4, t6-t7].

Tero fails to teach the if any of the levels of the average powers measured by the average section for the pattern signals exceeds a first threshold value, the control section determines as the antenna to receive the data an antenna which had been selected during an averaging period where the highest average power was measured [the average

power/Rssi, 54 in Fig. 6 & paragraph 0044; In step 106, comparing the average power in the packet to a threshold, thr_Great, as the first threshold value, if greater than the thr_Great, then, the control section selects antenna A at step 108, otherwise, to select antenna B, Fig. 8; the control section, such as the microprocessor performs the operation controls by executing the readable instruction from memory, paragraph 0045-0046], using the same reasoning in claim 1 above to combine Saed to Terao.

For claim 3, Terao teaches the diversity receiving apparatus [Fig. 1]. Terao teaches the averaging received signal power during the waiting time [the high speed updating, setting the gain in a period before starting in paragraph 0018; the predetermined gain beforehand in paragraph 0020; the setting, updating, the gain before normal agc operation executed according to Fig. 3 paragraph 0027, as the waiting for signals to set amplifier gain].

Terao fails to teach the average powers measured by averaging section, for the pattern signals exceeds the first threshold value, the control section compares between the average power exceeding the first threshold value and an average power measured during an averaging period subsequent to an averaging period where the average power exceeding the first threshold value is measured and determines as the antenna to receive the data an antenna which had bee selected during an average period wherein the highest average power was measured.

Saed teaches the wherein if any of the levels of the average power measured by the averaging section, for the pattern signals [54 for measuring average power/rssi of preamble in Fig. 6; paragraph 0044], exceeds the first threshold value [thr_Great, paragraph 0043],

the control section compares between the average power exceeding the first threshold value and an average power measured during an averaging period subsequent to an averaging period [software & microprocessor in paragraph 0045-0046, performs control in

Fig. 8, & measures average power in paragraph 0043-0044, during an averaging period of a second received preamble subsequent to a first receive preamble, the average starts on sample n or m in paragraph 0044], where the average power exceeding the first threshold value is measured and determines as an antenna to received the data an antenna which had been selected during an averaging period where the highest average power was measured [the comparing of average power calculated before in step 104 with thr_Great in step 106; to select antenna A when greater than thr_Great 104, Fig. 8], using the same reasoning in claim 1 above to combine Saed to Terao.

For claim 10, Terao teaches the diversity receiving apparatus [Fig, 1],

wherein the gain control section controls the gain of the gain amplifier section using a gain value based on an average power of a signal received by the antenna having been determined by the control section [the antenna A is selected beforehand to receive the radio signal, paragraph 0019; at t3, the AGC gain calculator calculated a gain based on the difference between present average received power of the radio signal received through antenna a and the target value, at t4 calculator 4 outputs calculated gain to gain control 107, to control the gain for amplifiers, paragraph 0022].

For claim 11, Terao teaches a wireless receiving apparatus [radio communication terminal in Fig. 1; receiving DS-Cdma signal, paragraph 0014],

the apparatus comprising a diversity receiving apparatus [switch 2, 5-7] for selecting an antenna [to select the antenna A, B in Fig. 1, paragraph 0015] and

a demodulation section for demodulating a signal received by the diversity receiving apparatus [receiver 100 & A/D 22a/22b, for demodulating selected antenna signal, paragraph 0015-0016]

wherein the diversity receiving apparatus includes a plurality of antennas [the antenna A, antenna B],

an antenna switching section [2] for selecting an antenna from the plurality of antennas [A, B] and outputting a signal received by the selected antenna a received signal [receiver 100 receives the selected output signal from antenna B via switch unit 2, controlled by 7 or 5, paragraph 0014-0015, Fig. 1],

a gain amplifier section [101, 106a/106b] for amplifying the received signal outputted from the antenna switching section [2] and outputting the amplified signal [amplifier 101 outputting amplified signal to mixer 102a/102b; 106a/106b outputs to A/D 22a/22b],

a gain control section [gain controller 107] for controlling a gain of the gain amplifier section [101, paragraph 0016],

a power measurement section [5] for measuring an instantaneous power of an output signal from the gain amplifier section [output signals from 101, 106a/106b, via A/D 22a/22b, average power 3, 5 calculates instantaneous power, or for a number of times, paragraph 0017],

an average section [3] for taking average of the instantaneous power measured by the power measurement section [the storing of calculated received instantaneous power into memory 6 & added to the stored received power, as the claimed measured by the power measurement section, instantaneous power 5, paragraph 0017], on an averaging period-by-averaging period basis, and measuring the average powers [the averaging power in period t6 to t7, four times for each antenna, the timing chart in Fig. 2, paragraph 0027],

a control section for controlling [107] the gain control section so that the gain amplifier section [101, 106a/106b] has a desired gain [controls the gain based on the AGC gain calculator 4, paragraph 0017, 0016], and

controlling a selection of the antennas made by the antenna selection switching section [the unit 7 compares the received averaged power in memory to select an antenna with larger received power via switch 2, paragraph 0017]

during all or part of a time period during which the signals are received, the control section allows the gain control section to fix the gain [the high speed updating, setting, the gain in a period before starting in paragraph 0018; the predetermined gain beforehand in paragraph 0020; the setting, updating, the gain before normal agc operation executed according to Fig. 3 paragraph 0027], allows the antenna switching section to sequentially switch the selection of the antennas during antenna switching periods which are synchronized with the averaging periods [the sequential antenna switching period in top row of Fig. 2, period t2-t3 from antenna A to antenna B; switching period t4-t5 from antenna B to antenna A, are respectively synchronized with the timing period for averaging power in second row of Fig. 2, the period t1-t2, t3-t4, t6-t7],

the determines an antenna to receive data contained in the signal based on levels of the average powers measured by the averaging section [the averaging 3, memory 6, the unit 7 compares the received averaged power in memory to select an antenna with larger received power via switch 2, paragraph 0017], on an averaging period-by-averaging period basis [the averaging power in period t6 to t7, four times for each antenna, the timing chart in Fig. 2, paragraph 0027].

Terao fails to teach the receiving a packet having embedded therein symbols which are multiple repetitions of a pattern signal having a predetermined pattern; the diversity receiving apparatus for receiving the packet; & an average of the instantaneous power measured by the power measurement section on an averaging period-by-averaging period basis, and the averaging period having the same time length as one period of the pattern

signal; & the determines an antenna to receive data contained in the packet based on levels of the average powers.

Saed et al. [Saed] teaches the receiving a packet [60, Fig. 7] having embedded therein symbols [preamble 62] which are multiple repetitions of a pattern signal having a predetermined pattern [the transmitting packet 60 to receiver 26 for repeated receiving each packet 60 which has pattern for synchronization to perform diversity selection in preamble 62, paragraph 42], the diversity receiving apparatus [Fig. 4] for receiving the packet [antenna a, B receives packets as shown in Fig. 7, paragraph 0042],

the averaging period having the same time length as one period of the pattern signal [the averaging power/rssi over a given period of the preamble, pattern, is the claimed the same time length as one period of pattern signal, paragraph 0044, 0015],

the determines an antenna to receive data contained in the packet based on levels of the average powers [the detecting a received packet at step 100, the step 106 when average power 106 is greater than the threshold thr_Great, to select antenna A at step 108, otherwise select antenna b at step 110, Fig. 8], in order to reliably select an antenna based on the received packet having preamble [paragraph 0016-0017]. Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to upgrade Terao with Saed's packet with preamble for selecting antenna, in order to reliably select an antenna based on the received packet having preamble.

Claims Objection

4, Claims 4-9 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

For claim 4, the prior arts fail to teach the if any of the levels of the average powers

measured by averaging section during the waiting time for the pattern signals exceeds a second threshold value which is higher than the first threshold value,

the gain amplifier section amplifies the received signal with a second fixed gain which is lower than the first fixed gain, together with the features for,

the control section determined as the antenna to receive the data as antenna which had been selected during an averaging period where the highest average power was measured among all average powers measured using the second gain.

For claim 5, the prior art fail to teach a correlation section for determining a correlation alue between a signal outputted from the gain amplifier section and the pattern signal and

a correlation detection section for detecting a timing at which the pattern signal is received, based on the correlation value determined by the correlation section and the averaging power measured by the averaging section, together with the features for

the if any of the levels of the average powers measured by the averaging section during the waiting time for the pattern signals is lower than the first threshold and a reception of the pattern signal is detected by the correlation detection section, together with the features for,

the control section determined as the antenna to receive the data as antenna which had been selected during an averaging period where the highest average power was measured among all average powers measured using the third gain.

For claims 6-9, the prior arts fail to teach multiple combined features in the respective claims 6-9. The prior arts been considered are: **Tero (US 2004/021,529 A1), Saed et al. (US 2004/0266,374 A1), Kawada et al. (US 2006/0133,544 A1), Wang (US 2006/0135,097 A1), Ramakrishnan et al. (US 2004/0179,495 A1), Wilhelmsson et al. (US 2002/0086,648 A1), Hovers et al. (US 2006/0030,365 A1), Kishimoto et al. (US 2002/0118,724 A1), Change et al. (US 5,692,019), Yamaguchi et al. (US 2002/0039,912 A1), Jager (US**

6,330,433 B1), Gottfried et al. (US 5,603,107), Andoh (US 5,241,701), Taromaru (US 5,548,836), Ono (US 6,947,716 B2), Takahashi et al. (US 5,918,164), Takahashi et al. (US 5,634,204), Murai (US 5,239,541), Matsui et al. (US 6,985,544 B2).

Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charles C. Chow whose telephone number is (571) 272-7889. The examiner can normally be reached on 8:00am-5:30pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Urban can be reached on (571) 272-7899. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Charles Chow

January 8, 2007.

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